THE VETERINARY RECORD

A Weekly Journal for the Profession.

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Annual Report for 1894 of Veterinary Department of the Board of Agriculture.

We had quite given up any idea of again seeing a report of the veterinary work of the Board, and are more than pleased to see this long delayed volume. The latter part is similar to that issued when Prof. Brown was Director—tables and statistics of animals imported and animals affected with disease at home. The first part of the volume is remodelled. There is no general sketch of the work done, such as used to be signed by Professor Brown, and there is no report from Mr. Duguid. The two reports forming the bulk of the book are by the Chief Veterinary Officer and by the Principal of the Animals Division. It will be remembered that in one of the Board's communications to the Royal College of Veterinary Surgeons we were informed that these two officers—Mr. Cope and Major Tennant—were equal in rank and position. We therefore suppose that their reports are the independent work of each authority, subject of course to correction and editing by the Secretary. We note that Mr. Cope's report is placed first. His opening sentence is very satisfactory, containing as it does the proud statement that "at no previous period have the live-stock of this country been so free from specific affections as at present."

He then goes on to pay a well-merited compliment to the veterinary inspectors at the ports who perform very responsible duties in a most satisfactory manner. In 1894 their work included the inspection of 474,755 cattle and 480,374 sheep. These inspectors we believe are not acknowledged as officers of the Board—not even included with the travelling inspectors in the "Animals Division."

The report of the Chief Veterinary Officer covers the following diseases—Swine-fever, Pleuro-pneumonia, Foot-and-Mouth disease, Rabies, Anthrax, Glanders, and Verrucose Endocarditis of swine. As the reference is to what took place the year before last a good deal is ancient history, and therefore of most value as showing the opinion of the veterinary adviser to the Board in face of the gigantic failure which has attended their action during 1895. We gather that the Swine-fever Act has "added very materially to the duties of the veterinary officers of the Board, no less than 12,054 sets of viscera having been examined and reported upon during 1894." For all this, the veterinary staff has not been strengthened, and it remains one short of the strength which obtained when Professor Brown was Director.

A curious remark in the report is that, when the Departmental Committee reported in favour of the Board undertaking the stamping out of swine-fever, "they no doubt had in their recollection the success which attended the efforts to eradicate pleuro-pneumonia." We have always thought that it was this success that misled Mr. Herbert Gardner, and we have pointed out before that the evidence given by experts before that Committee was ignored. No doubt the late president and his lay advisers thought they were going to have a nice quiet walk-over with swine-fever, and thus establish a great reputation. They were told by Professor Brown that to stamp out swine-fever would require cattle-plague regulations, and they were told by Professors Duguid and Axe that wide and general restriction of movement of swine in infected areas would be essential. They ignored all such evidence, and commenced with little more than great confidence and a staff of utterly untrained officers and inspectors.

The report proceeds to say that swine-fever is totally different from pleuro-pneumonia. That, whereas in the latter disease the lung lesions are always well marked and afford reliable evidence for diagnosis when the viscera arrive at the Board's Laboratory, in the former disease may exist and be noticeable during life, but after death present no definite lesion. The comment upon this is, "These facts have added materially to the difficulties and labours of the Board's veterinary officers in determining the presence or absence of swine-fever." No doubt the comment is true, but when we bear in mind the delay which is entailed by sending specimens to London for diagnosis, the conclusion forced upon us is that all this expense and trouble might well be saved, and local veterinary surgeons entrusted with the diagnosis of disease. If this were done, the further expense of a large staff of travelling inspectors might also be saved.

A very instructive account is given of the *post-mortem* lesions of the disease to which we hope again to refer. We may just say that this is illustrated by some really beautiful coloured drawings, and as the price of the report is only one-and-fourpence every practitioner should secure an early copy.

The section on pleuro-pneumonia is only interesting as containing an account of the last outbreak of this disease in England, and for a reference to some lung disease in Canadian cattle which the department persist in calling pleuro-pneumonia.

We shall continue our notice of this report next week.

The Cause of Swine Fever.

Many attempts have been made in various countries to isolate the causal organism of swine-fever. Success has not attended these efforts but there is reason to believe that, at last, the offender has been found. In the last number of the quarterly *Journal of Comparative Pathology* Professor M'Fadyean describes his researches and experiments. From these we gather that he has isolated and cultivated a bacillus found in the mesenteric glands of pigs suffering from swine-fever. That by inoculation with this bacillus he has produced swine-fever, and that from the affected animal he has again obtained the causal organism.

CASES AND ARTICLES.

Should Tuberculosis be Included Under the Contagious Diseases (Animals) Act.

By G. Upton.

On this subject much has been said of late by veterinary surgeons, some wishing it to be scheduled, some otherwise. To what end those who require it included with other contagious diseases is a query; for the safety of the public something perhaps should be done. Is the Board of Agriculture treating the veterinary profession fairly as regards contagious diseases? To read, mark, learn, and inwardly digest pneumo-dermo-enteritis of swine, and to be able to distinguish between a normal ileo-cœcal valve and dreadful ulceration of the intestines are surely enough at present for our laymen, without teaching them the different phases of inflammation which take place in the lungs of oxen.

As regards owners of dairy stock, what percentage of respectable dairy farmers care to keep a wasting tuberculous cow on their premises? Not many I guess. If the disease is included under the contagious diseases they may be troubled with officers and inspectors *ad nauseam*, in fact farmers will say "the police we have always with us." Should dairy farmers have their premises plastered with bills announcing this disease existing on their farms it will be a serious injury to their trade, and in many cases mean ruination, as the public will probably think it gross negligence on the part of farmers to have tuberculous cows,

If our profession think fit to do something respecting the disease the Board of Agriculture should be petitioned to appoint veterinary surgeons inspectors of dairies, and given power to order removal of any tuberculous cow from a herd. By asking the Board to include the disease under the Contagious Diseases Act with the present routine of management, insult is added to injury. Surely our profession does not wish to educate outsiders, although the Board of Agriculture seems desirous of appointing laymen instead of qualified veterinary surgeons.

If compulsory notification is introduced, and every case of tuberculosis reported, the time is near at hand when farmers will be their own veterinary surgeons. However, the Board of Agriculture by employing lay-inspectors, cannot say contagious diseases have found their master.

THE VETERINARIAN AND LEGISLATION.

Injured Animals' Act, 1894.

This Act, which came into operation on the 20th July, 1894, provides that:—If a police constable finds any horse, mule, or ass so severely injured that it cannot without cruelty be led away, he shall, if the owner is absent or refuses to consent to the destruction of the animal, at once summon a duly registered veterinary surgeon, if any such surgeon resides within a reasonable distance, and if it appears by the certificate of such veterinary surgeon that the animal is mortally injured or so severely that it is cruel to keep it alive, it shall be lawful for the police constable without the consent of the owner to slaughter the animal or cause it to be slaughtered with such instruments or appliances, and with such precautions and in such manner as to inflict as little pain and suffering as practicable.

Any reasonable expenses incurred for the above purposes and in the removal of the carcase, may be recovered from the owner summarily as a civil debt, any other expense shall be defrayed out of the Local Police Fund.

This Act extends to the whole of the United Kingdom.

The fee originally payable to a veterinary surgeon within the Metropolitan Police Area was one guinea, this was reduced in 1895 by Mr. Home Secretary Asquith to half-a-guinea.

VETERINARY SOCIETIES.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

The ordinary monthly meeting was held at the Royal College of Veterinary Surgeons, 10, Red Lion Square, Bloomsbury, on Thursday night, the 2nd instant. Prof. Penberthy, the President, occupied the chair, and the other fellows present were: Messrs. A. L. Butters, Vet.-Capt. E. R. C. Butler, A.V.D., John Baxter, Vet.-Capt. L. Blenkinsopp, A.V.D., H. W. Caton, Matthew Clarke, W. J. Dowell, E. Edwards, Vet.-Major B. Glover, A.V.D., Thos. C. Garry, J. S. Hurndall, H. C. Legge, F. C. Mahon, *Hon. Sec.*, Hugh A. MacCormack, Prof. Macqueen, Joseph H. Manton, W. Perryman, H. G. Rogers, W. Reekie, F. Samson, Vet.-Capt. F. Smith, A.V.D., Hugh Singleton, W. Shipley, W. E. Taylor, J. E. Tooth, T. Upton, F. W. Wragg, and as a visitor H. W. King.

On the motion of Mr. Samson, seconded by Mr. Hurndall, the minutes of the preceding meeting were taken as read, and were signed.

The Hon. Sec. (Mr. F. C. Mahon) announced communications from Mr. S. Villar, ex-president of the Society, Mr. Prudames, Mr. Wheatley, Mr. J. R. Cox, and Mr. Kitchen expressive of regret at their inability to attend.

Mr. T. B. Arnold wrote sending a cheque for £4 4s. for subscriptions due from himself and his brother, and intimating the resignation of the latter, owing to his being unable to attend the meetings.

Grunting in Horses.

The following circular letter from the Lincolnshire V.M.A. had been printed with the agenda of their present meeting:—

"Market Deeping, Lincs.
Nov. 15th, 1895.

Dear Sir,

The question of Grunting and its relation to Soundness, having been introduced by Mr. Howse, M.R.C.V.S. Lincoln, at a meeting of the above Society, at Lincoln, on the 7th inst., after discussion the following resolution was proposed by the President, Mr. T. A. Rudkin,

M.R.C.V.S., Grantham, seconded by Mr. Chas. Hartley, F.R.C.V.S., Lincoln, snd carried *nem con.*

"*That in the opinion of the Members of the Lincolnshire Veterinary Medical Association, the sound known as Grunting is a decided cause of unsoundness, and is a sufficient reason for the rejection of any animal so affected, when submitted to veterinary examination.*"

As the subject is of the greatest importance to all veterinary surgeons who examine horses as to soundness, and as there appears, from recent decisions, to be a difference of opinion amongst members of the profession, I am desired to ask you to bring the matter before your Society at its next meeting, in order that a general opinion may be taken, and, if possible, a unanimous decision come to upon it.

A concensus of opinion on the subject is much to be desired, as it would obviate the annoyance to practitioners resulting from the present state of affairs, and no less so the loss of dignity to the profession which is entailed by the opposite opinions of its members.—Faithfully yours,

JOHN A. ROBINSON, *Hon.Sec*

F. C. MAHON, ESQ, *Hon. Sec.*
Central Veterinary Medical Society."

The CHAIRMAN remarked that he had no doubt that members had considered the letter and were now prepared to express an opinion concerning it. As Mr. Caton had moved that the consideration of the communication be deferred, it now devolved upon him to open the discussion.

Mr. CATON said he would express his opinion in a very few words. He thought grunting might arise from such a variety of causes that it was certainly not safe to give an opinion that grunting was not unsoundness. Hence, as far as his opinion went, he was inclined to confirm the view expressed by the Lincolnshire Society.

Mr. TAYLOR said that, having examined some hundreds of horses—most of them heavy horses, 'bus horses—he was not of opinion that every horse which grunted was therefore necessarily unsound. Mr. Caton while say that grunting might arise from a variety of causes, did not specify what those causes were. Horses would grunt from fear, and would grunt when a saddle was put upon their backs and the girths were tightened up, but when those animals were galloped they would be found to be sound. If they put a horse against a wall and threaten to strike it with a stick and it grunted, they must not conclude from that that the animal was not sound. If, after galloping such a horse they found it was sound in its wind, they should not reject it because it had previously grunted. He did not believe they would be justified in rejecting every horse that grunted, as unsound.

Mr. SAMSON stated that not only for the protection of their clients but for the sake of their own reputation as veterinary surgeons he should reject on the spot, as unsound, every horse that grunted. Mr. Taylor suggested that they should first gallop a grunting horse before they pronounced it to be unsound, but they had not the facilities for galloping always at hand. Personally he (Mr. Samson) should reject any horse that grunted. He should certainly mention the fact in his certificate.

Mr. BUTTERS remarked that the subject before them was one which required careful consideration. The mere fact that a horse grunted was not in itself he thought always sufficient to warrant them in saying the animal was unsound. If they did this off-hand they might often reject horses which were to all intents and purposes sound. At the same time in his experience he had found that many grunters were unsound; and in several instances when he had come to make a post-mortem examination of such horses he discovered old-standing disease of the lungs, and pleuritic adhesions. There was a difference in the grunting of horses and in the signification of the particular sounds, so far as he was able to judge. In the case of a prolonged grunt, somewhat resembling a groan, a horse was more likely to be unsound than another animal which emitted a grunt of a shorter and sharper character. It was difficult in words to convey his meaning; one wanted to have the animals before them and to hear their different grunts to make the matter plain. In the one case they had a short, sharp grunt while in the other the sound more nearly resembled a groan indicative of pain. Of two horses, say two cart horses, the one that was a grunter did not carry so much flesh as the other that did not grunt. Personally he should feel inclined to reject as unsound every horse that grunted, but he admitted that the subject under discussion was fraught with difficulty, and upon it they could never hope to have unanimity of opinion.

Professor MACQUEEN: I have great pleasure in entering upon the discussion of this letter of the Lincolnshire Veterinary Medical Association. They ask for an opinion, for our opinion, and it is quite plain that they are anxious for an affirmative opinion to support their views. Well, I do not agree with the Lincolnshire Association, nor do I agree with the majority of those who have spoken upon this subject to-night. So long as the pathology of "Roaring and Grunting," remains in its present unsatisfactory state, it is very difficult indeed to forsee the time when anyone who considers the subject thoroughly will be able to agree in condemning grunting horses. To begin with, what is grunting? We have heard from the Lincolnshire Society and from the members present to-night that grunting is indicative of unsoundness, but I have never been able to distinguish the peculiar grunt which is said to be characteristic of disease. Grunting has no pathology. No one can specify the cause of grunting. Let us think for a moment of the various grunts that one may hear in practice. In horses, apparently healthy, one may have the grunt of defecation, the grunt which accompanies urination, the grunt of fear, and the grunt of effort. A horse starting a heavy load will sometimes grunt, and there is the grunt of what I may call delight. A horse in its first few strides may make a grunting noise, and there is the grunt which accompanies certain chest affections. Now, of all these grunts, which is to be regarded as the grunt which indicates unsoundness of wind? Is it not natural for some people to grunt occasionally (laughter), and is it not natural for some horses to grunt occasionally as well? Although it does not appear on paper, I believe the motive of the Lincolnshire Society in addressing us is to elicit an opinion in confirmation of their view that grunting indicates *unsoundness of wind*. I venture to deny that grunting always indicates defective wind. If any gentleman here is able to substantiate the connection between grunting and unsoundness of wind I shall have to modify my view. Some gentlemen have referred to the difference in the length of the sounds. Some say that we should condemn the horse that makes a prolonged grunt but not the animal that makes a short one; the horse that makes a deep grunt but not the horse that makes a shallow one; and always the horse with a certain musical talent, that emits long notes and performs its peculiar music best when accompanied by an Ashplant obligato. (Laughter.)

I do not believe in condemning horses that grunt, as unsound of *wind*, because I have found many horses that grunted when threatened with a stick—not affected with either whistling or roaring, nor were they broken-winded. Again I have found horses, which were free of

grunting, well marked roarers or whistlers, and sometimes broken-winded. For these reasons I have never been able to satisfy myself that grunting is connected with defects of wind. If grunting had some connection, some easily conceivable connection with defects of the respiratory apparatus, it might be possible and perhaps advisable to take notice of it when examining horses for soundness. My opinion is that belief in the importance of the sound called grunting has arisen largely from the force of circumstances alluded to by Mr. Samson, that at some yards it is impossible to test a horse's wind in the best manner by galloping, hence the continuance of the custom of attempting to extract some sort of sound by threatening the horse with a stick. I have no confidence in that method of examining a horse's wind, and do not believe that many practitioners will certify that a horse is sound in wind after a test of that kind. I know that many go through the formality of threatening the horse and if it does not emit a grunt they form an opinion, but as a test of the soundness of a horse's wind I submit that the practice is entirely illusory.

What has been the course of this habit or so-called unsoundness or defect. Has there ever been a decision in any Law Court on grunting? I cannot find a case. You may consult the law books, Oliphant, Ross Stewart, or the French code and you will find that grunting is merely mentioned. There is no decision on the point. I question if there are many members of the profession in London who will accept the responsibility of rejecting a horse as unsound because it grunts if there is no other defect. I have never seen a certificate in which the unsoundness was grunting and nothing else. Practitioners generally endeavour to find some defect much more important than the emission of a grunt. Perhaps I am going wide of the question before us. But I believe, sir, we are at liberty to consider the whole of this letter of the Lincolnshire Society, and not merely the resolution which they passed. (The Chairman: Certainly.) This is the resolution:—"That in the opinion of the members of the Lincolnshire Veterinary Medical Association, the sound known as grunting is a decided cause of unsoundness, and it is a sufficient reason for the rejection of any animal so affected, when submitted to veterinary examination." I have expressed my opinion regarding that. With respect to grunting by itself, I prefer to preserve an open mind, to form my opinion as each case is brought before me, but with regard to the statement that grunting constitutes unsoundness of *wind*, I most emphatically, and with every consideration, say that grunting does not constitute unsoundness. The proper way to test a horse's wind is to gallop him or, in the case of a cart-horse, to put a heavy load behind him and drive him up a hill.

If, in either case, the horse does not give any sort of roaring or whistling, or any indication of irregular respiration, then I say the horse is sound in wind, or free from unsoundness in wind.

Passing to the last paragraph of the Lincolnshire Society's letter which says: "A concensus of opinion on the subject is much to be desired." I agree with that. I believe it would be a good thing for the profession if we could come to some agreement either one way or the other, but I do not think it would alter the practice very much, because as long as horses are examined for soundness, it is the individual opinion that will carry the point. It is useless for me to accept the responsibility for some other gentleman, or for some other gentleman to accept my responsibility. Every horse must be examined by itself, and must be tested with a view of ascertaining its capacity to do the work required of it, according to the needs of the intending purchaser. Animals cannot be dealt with like a piece of machinery. The concensus of opinion desired would, the Association proceeded to say, "obviate the annoyance to practitioners resulting from the present state of affairs."

It is no part of my business to diminish the annoyance to other practitioners. It is my duty to do justice to my client, to give him my opinion. I have nothing to do with the peace of mind, or condition of happiness of the individual who may be concerned with my opinion, and I consider that such pleadings are petty annoyance. Professional annoyance! A man who gives a professional opinion is not bartering his soul, he is not doing more than simply exercising his daily calling, and if he gives his opinion honestly it matters not how many annoyances he creates, so long as he does his duty. This is one of the weaknesses of the profession, its thin-skinnedness, its absurd, uneasy, ninteenth-century susceptibility. Because one professional brother differs from another he is supposed to give professional annoyance. Humbug! (Laughter). Professional annoyance! What of the other individual whose opinion has been contradicted? If one man gives annoyance to another the other man is very likely to give annoyance to the first. We never think of that. The annoyance is all on one side. Hence the difficulty. Then the letter speaks of "loss of dignity to the profession." Good old dignity! (Laughter). There is nothing like trotting out dignity on every occasion. Some time ago it was the "status of the profession" about which we were concerned, now it is its dignity. What is it that makes the dignity of the profession. A man's own conduct. If a man gives his honest opinion he retains his dignity. If he prove wrong he can only be accused of making a mistake. If he honestly and frankly expresses his own opinion, no matter how opposed it is to that of some other individual, he does not damage the dignity of the profession. He maintains that dignity and supports his own. That is all I have to say in regard to this question. If it is necessary I certainly shall be most willing to propose "That the question of grunting in relation to unsoundness be left to the discretion of the individual practitioner." If the question is to be narrowed down to the issue whether grunting does or does not constitute unsoundness of *wind*, then I shall be prepared to move "That grunting does not constitute unsoundness in wind." (Applause.)

Vet.-Captain F. SMITH said he could not regard any horse as unsound which simply grunted. If a horse grunted without making a noise he could certainly mention the matter in the certificate he gave, but personally he should not consider the horse as unsound in its wind. Professor Macqueen had very clearly put before them various forms of grunting which many of them had never thought of previously, but he believed that he minimised the difference in the grunt that existed between the undoubted roarer and the horse which did not roar. Mr. Butters had laid stress upon the fact of a roarer emitting a peculiarly deep grunt, which was hardly a grunt but rather a groan, whereas an animal which made no noise whatever in its wind produced quite a different kind of grunt. He was not prepared to say that they could determine the state of a horse's wind by simply placing him against a wall and threatening him with a stick and judging him by the character of the grunt emitted. As far as his experience went there was a marked difference between the animal that grunted and made no noise in its wind and the one which grunted and roared.

Vet.-Captain BLENKINSOP agreed with Professor Macqueen that a horse might grunt for many different reasons. He had known hunters grunt when in good condition after they had just landed over a fence. Horses grunted, too, when they shied. If they declared a horse was unsound because it grunted they should state how the grunt was produced.

Mr. CLARKE said he should be loth to discontinue the practice of testing a horse by placing him against a wall

and threatening him with a stick. He believed that grunting was, to a great extent, a symptom of roaring. There were, however, horses that grunted and yet did not make a roar. They had few chances of finding out, except by galloping, whether a horse was likely to make a noise or not. He thought they should not reject the idea of grunting as symptomatic of roaring.

Mr. GARRY remarked that it was necessary to ascertain the purpose for which a horse was required before they decided that he was absolutely unsound and so spoiled the sale. A horse might be fit for slow work although he grunted when threatened with a stick but yet showed no unsoundness of wind. In his experience heavy horses often grunted when nothing was the matter with their wind. In a case of a horse wanted for hunting, he should be inclined to regard an animal that grunted when threatened, with very grave suspicion. Again, when no facility was afforded for galloping a horse it was a very difficult matter to absolutely determine that the animal was sound or unsound. If the horse grunted he should mention the fact and advise the owner to test him the next day in order to ascertain the state of his wind.

Mr. WRAGG, after reiterating the different descriptions of grunting mentioned by Professor Macqueen, said he was of opinion, generally speaking, that grunting was indicative of disease; and that in the majority of cases the horses which grunted would be found to become unsound in their wind. Hence he regarded grunting as unsoundness and he should continue his practice of rejecting horses which grunted.

Prof. MACQUEEN :—What is the disease ?

Mr. WRAGG :—Some organic disease.

Prof. MACQUEEN :—We have not got the length of the organic disease.

Mr. WRAGG :—Do you mean the length of time it exists.

Prof. MACQUEEN :—No, I mean the name of the disease you have in your mind.

Mr. WRAGG :—Well, adhesions of the lung would produce grunting in my opinion and I am inclined to think that softening of the liver would also produce it. I feel perfectly confident in my own mind that grunting is indicative of disease, and for this reason : whenever I have recommended a client to purchase a horse that has been a grunter, I have generally found that that animal has turned out a roarer, and when it has been seized with a slight attack of influenza some organic disease has supervened and proved fatal. That being my opinion I shall continue to regard grunting as unsoundness.

Mr. REEKIE, speaking from his own experience declared that if they bought a horse that grunted and kept him six months they would be sure to find him a roarer one day, especially if he caught a little cold. He alluded to hunting and harness horses. His belief was that grunting was indicative, in the great majority of cases of roaring, and was caused by the first symptoms of disease of the lungs. When placed against a wall and threatened with a stick horses might grunt through nervousness, but the sound emitted from this cause should not be confounded with the grunting they had present in their minds.

Prof. MACQUEEN :—How do you distinguish ?

Mr. REEKIE :—That is left to individual opinion.

Mr. TAYLOR :– Does roaring or whistling proceed from a diseased lung ?

Mr. REEKIE :—Certainly from a diseased lung but in the majority of cases it proceeds from the larynx.

Vet.-Major GLOVER said that though he attributed a certain amount of importance to grunting when he examined a horse's wind, yet he held that they could not ascertain whether a horse was really sound in its wind or not without first galloping it or submitting it to some severe exercise. He had recognised for some years that there was a kind of grunt which one might be pretty certain was indicative of unsoundness and which showed that a horse was a roarer. In their resolution the Lincolnshire Association asserted that grunting was "a decided cause of unsoundness." He did not share that view. He knew many horses which grunted and which yet did not whistle or roar or get distressed when they were galloped. On the other hand he had come across a few horses which were roarers and which could not be made to grunt. Grunting, he thought, was merely suspicious. If when examining a horse it gave a grunt—a characteristic grunt—he should certainly, before pronouncing upon the condition of its wind, insist upon galloping it. (Mr. Samson : But you don't always have the chance.) Then he should only give a qualified opinion There was a grunt which when they heard it, they might consider it was 10 to 1 that the horse who made it was unsound in his wind. He proposed : "That, in the opinion of this Association, the sound known as grunting should not in itself be considered an indication of unsoundness ; and that whether a horse grunts or not when threatened, without a further test only a qualified opinion should be given."

Prof. MACQUEEN seconded the motion.

Mr. REEKIE : I do not know whether I am quite correct but I fancy this subject was brought before the Lincolnshire Association on account of a horse bought at Tattersall's—a hunter.

Mr. HURNDALL maintained that if a horse grunted in a sale yard on being placed against a wall and threatened with a stick, it would be unwise—in the absence of any opportunity for further testing that horse—to give a certificate of soundness. They must act straightforwardly in the interests of their client and distinctly tell him that a horse made this grunting noise, and that without testing the horse by galloping, or in the case of a cart horse by driving him up hill with a heavy load behind him, it was impossible to say whether the animal was sound.

Mr. WRAGG said he wished to be clearly understood. What he desired to convey to that meeting was his opinion that, when a horse grunted on being placed against a wall and threatened with a stick, the fact of the grunt was indicative of disease and, in the majority of cases, was a premonitory symptom of roaring. This he considered unsoundness although the animal might be sound in his wind and unable to make any noise when galloped.

Mr. HURNDALL : A horse may be made to grunt when threatened with a stick but he may not be unsound for all that.

Professor MACQUEEN : Does Mr. Wragg mean to say that if he places a horse against a wall, threatens it with a stick, and it grunts, he considers the animal unsound on that examination only ?

Mr. WRAGG : I should give a certificate to say that the horse was unsound because he was a grunter. I always like to leave myself a little loophole.

Professor MACQUEEN : You don't consider a horse unsound in wind merely because it grunts ?

Mr. Wragg : I say unsound in wind, and in the majority of cases I believe grunting is a premonitory symptom of roaring.

Professor MACQUEEN : You didn't say so before. I should like to add one word on the remarks which have been made as to testing a horse with a stick. It may not be generally known but it is a fact that in certain parts of the country a horse that grunts when placed against a wall and threatened with a stick, is often trained in a dealer's stable not to grunt. The practice is to approach the horse several times a day, threatening it with a fist or a stick, until at length he becomes so accustomed to the procedure that he ceases to grunt when thus threatened. Of course that is only done in cases where the horse grunts and does not whistle or roar. I throw

grunting, well marked roarers or whistlers, and sometimes broken-winded. For these reasons I have never been able to satisfy myself that grunting is connected with defects of wind. If grunting had some connection, some easily conceivable connection with defects of the respiratory apparatus, it might be possible and perhaps advisable to take notice of it when examining horses for soundness. My opinion is that belief in the importance of the sound called grunting has arisen largely from the force of circumstances alluded to by Mr. Samson, that at some yards it is impossible to test a horse's wind in the best manner by galloping, hence the continuance of the custom of attempting to extract some sort of sound by threatening the horse with a stick. I have no confidence in that method of examining a horse's wind, and do not believe that many practitioners will certify that a horse is sound in wind after a test of that kind. I know that many go through the formality of threatening the horse and if it does not emit a grunt they form an opinion, but as a test of the soundness of a horse's wind I submit that the practice is entirely illusory.

What has been the course of this habit or so-called unsoundness or defect. Has there ever been a decision in any Law Court on grunting? I cannot find a case. You may consult the law books, Oliphant, Ross Stewart, or the French code and you will find that grunting is merely mentioned. There is no decision on the point. I question if there are many members of the profession in London who will accept the responsibility of rejecting a horse as unsound because it grunts if there is no other defect. I have never seen a certificate in which the unsoundness was grunting and nothing else. Practitioners generally endeavour to find some defect much more important than the emission of a grunt. Perhaps I am going wide of the question before us. But I believe, sir, we are at liberty to consider the whole of this letter of the Lincolnshire Society, and not merely the resolution which they passed. (The Chairman: Certainly.) This is the resolution:—"That in the opinion of the members of the Lincolnshire Veterinary Medical Association, the sound known as grunting is a decided cause of unsoundness, and it is a sufficient reason for the rejection of any animal so affected, when submitted to veterinary examination." I have expressed my opinion regarding that. With respect to grunting by itself, I prefer to preserve an open mind, to form my opinion as each case is brought before me, but with regard to the statement that grunting constitutes unsoundness of *wind*, I most emphatically, and with every consideration, say that grunting does not constitute unsoundness. The proper way to test a horse's wind is to gallop him or, in the case of a cart-horse, to put a heavy load behind him and drive him up a hill.

If, in either case, the horse does not give any sort of roaring or whistling, or any indication of irregular respiration, then I say the horse is sound in wind, or free from unsoundness in wind.

Passing to the last paragraph of the Lincolnshire Society's letter which says: "A concensus of opinion on the subject is much to be desired." I agree with that. I believe it would be a good thing for the profession if we could come to some agreement either one way or the other, but I do not think it would alter the practice very much, because as long as horses are examined for soundness, it is the individual opinion that will carry the point. It is useless for me to accept the responsibility for some other gentleman, or for some other gentleman to accept my responsibility. Every horse must be examined by itself, and must be tested with a view of ascertaining its capacity to do the work required of it, according to the needs of the intending purchaser. Animals cannot be dealt with like a piece of machinery. The concensus of opinion desired would, the Association proceeded to say, "obviate the annoyance to practitioners resulting from the present state of affairs."

It is no part of my business to diminish the annoyance to other practitioners. It is my duty to do justice to my client, to give him my opinion. I have nothing to do with the peace of mind, or condition of happiness of the individual who may be concerned with my opinion, and I consider that such pleadings are petty annoyance. Professional annoyance! A man who gives a professional opinion is not bartering his soul, he is not doing more than simply exercising his daily calling, and if he gives his opinion honestly it matters not how many annoyances he creates, so long as he does his duty. This is one of the weaknesses of the profession, its thin-skinnedness, its absurd, uneasy, ninteenth-century susceptibility. Because one professional brother differs from another he is supposed to give professional annoyance. Humbug! (Laughter). Professional annoyance! What of the other individual whose opinion has been contradicted? If one man gives annoyance to another the other man is very likely to give annoyance to the first. We never think of that. The annoyance is all on one side. Hence the difficulty. Then the letter speaks of "loss of dignity to the profession." Good old dignity! (Laughter). There is nothing like trotting out dignity on every occasion. Some time ago it was the "status of the profession" about which we were concerned, now it is its dignity. What is it that makes the dignity of the profession. A man's own conduct. If a man gives his honest opinion he retains his dignity. If he prove wrong he can only be accused of making a mistake. If he honestly and frankly expresses his own opinion, no matter how opposed it is to that of some other individual, he does not damage the dignity of the profession. He maintains that dignity and supports his own. That is all I have to say in regard to this question. If it is necessary I certainly shall be most willing to propose "That the question of grunting in relation to unsoundness be left to the discretion of the individual practitioner." If the question is to be narrowed down to the issue whether grunting does or does not constitute unsoundness of *wind*, then I shall be prepared to move "That grunting does not constitute unsoundness in wind." (Applause.)

Vet.-Captain F. SMITH said he could not regard any horse as unsound which simply grunted. If a horse grunted without making a noise he could certainly mention the matter in the certificate he gave, but personally he should not consider the horse as unsound in its wind. Professor Macqueen had very clearly put before them various forms of grunting which many of them had never thought of previously, but he believed that he minimised the difference in the grunt that existed between the undoubted roarer and the horse which did not roar. Mr. Butters had laid stress upon the fact of a roarer emitting a peculiarly deep grunt, which was hardly a grunt but rather a groan, whereas an animal which made no noise whatever in its wind produced quite a different kind of grunt. He was not prepared to say that they could determine the state of a horse's wind by simply placing him against a wall and threatening him with a stick and judging him by the character of the grunt emitted. As far as his experience went there was a marked difference between the animal that grunted and made no noise in its wind and the one which grunted and roared.

Vet.-Captain BLENKINSOP agreed with Professor Macqueen that a horse might grunt for many different reasons. He had known hunters grunt when in good condition after they had just landed over a fence. Horses grunted, too, when they shied. If they declared a horse was unsound because it grunted they should state how the grunt was produced.

Mr. CLARKE said he should be loth to discontinue the practice of testing a horse by placing him against a wall

and threatening him with a stick. He believed that grunting was, to a great extent, a symptom of roaring. There were, however, horses that grunted and yet did not make a roar. They had few chances of finding out, except by galloping, whether a horse was likely to make a noise or not. He thought they should not reject the idea of grunting as symptomatic of roaring.

Mr. GARRY remarked that it was necessary to ascertain the purpose for which a horse was required before they decided that he was absolutely unsound and so spoiled the sale. A horse might be fit for slow work although he grunted when threatened with a stick but yet showed no unsoundness of wind. In his experience heavy horses often grunted when nothing was the matter with their wind. In a case of a horse wanted for hunting, he should be inclined to regard an animal that grunted when threatened, with very grave suspicion. Again, when no facility was afforded for galloping a horse it was a very difficult matter to absolutely determine that the animal was sound or unsound. If the horse grunted he should mention the fact and advise the owner to test him the next day in order to ascertain the state of his wind.

Mr. WRAGG, after reiterating the different descriptions of grunting mentioned by Professor Macqueen, said he was of opinion, generally speaking, that grunting was indicative of disease; and that in the majority of cases the horses which grunted would be found to become unsound in their wind. Hence he regarded grunting as unsoundness and he should continue his practice of rejecting horses which grunted.

Prof. MACQUEEN :—What is the disease ?

Mr. WRAGG :—Some organic disease.

Prof. MACQUEEN :—We have not got the length of the organic disease.

Mr. WRAGG :—Do you mean the length of time it exists.

Prof. MACQUEEN :—No, I mean the name of the disease you have in your mind.

Mr. WRAGG :—Well, adhesions of the lung would produce grunting in my opinion and I am inclined to think that softening of the liver would also produce it. I feel perfectly confident in my own mind that grunting is indicative of disease, and for this reason : whenever I have recommended a client to purchase a horse that has been a grunter, I have generally found that that animal has turned out a roarer, and when it has been seized with a slight attack of influenza some organic disease has supervened and proved fatal. That being my opinion I shall continue to regard grunting as unsoundness.

Mr. REEKIE, speaking from his own experience declared that if they bought a horse that grunted and kept him six months they would be sure to find him a roarer one day, especially if he caught a little cold. He alluded to hunting and harness horses. His belief was that grunting was indicative, in the great majority of cases of roaring, and was caused by the first symptoms of disease of the lungs. When placed against a wall and threatened with a stick horses might grunt through nervousness, but the sound emitted from this cause should not be confounded with the grunting they had present in their minds.

Prof. MACQUEEN :—How do you distinguish ?

Mr. REEKIE :—That is left to individual opinion.

Mr. TAYLOR :– Does roaring or whistling proceed from a diseased lung ?

Mr. REEKIE :—Certainly from a diseased lung but in the majority of cases it proceeds from the larynx.

Vet.-Major GLOVER said that though he attributed a certain amount of importance to grunting when he examined a horse's wind, yet he held that they could not ascertain whether a horse was really sound in its wind or not without first galloping it or submitting it to some severe exercise. He had recognised for some years that there was a kind of grunt which one might be pretty certain was indicative of unsoundness and which showed that a horse was a roarer. In their resolution the Lincolnshire Association asserted that grunting was "a decided cause of unsoundness." He did not share that view. He knew many horses which grunted and which yet did not whistle or roar or get distressed when they were galloped. On the other hand he had come across a few horses which were roarers and which could not be made to grunt. Grunting, he thought, was merely suspicious. If when examining a horse it gave a grunt—a characteristic grunt—he should certainly, before pronouncing upon the condition of its wind, insist upon galloping it. (Mr. Samson : But you don't always have the chance.) Then he should only give a qualified opinion There was a grunt which when they heard it, they might consider it was 10 to 1 that the horse who made it was unsound in his wind. He proposed : "That, in the opinion of this Association, the sound known as grunting should not in itself be considered an indication of unsoundness ; and that whether a horse grunts or not when threatened, without a further test only a qualified opinion should be given."

Prof. MACQUEEN seconded the motion.

Mr. REEKIE : I do not know whether I am quite correct but I fancy this subject was brought before the Lincolnshire Association on account of a horse bought at Tattersall's—a hunter.

Mr. HURNDALL maintained that if a horse grunted in a sale yard on being placed against a wall and threatened with a stick, it would be unwise—in the absence of any opportunity for further testing that horse—to give a certificate of soundness. They must act straightforwardly in the interests of their client and distinctly tell him that a horse made this grunting noise, and that without testing the horse by galloping, or in the case of a cart horse by driving him up hill with a heavy load behind him, it was impossible to say whether the animal was sound.

Mr. WRAGG said he wished to be clearly understood. What he desired to convey to that meeting was his opinion that, when a horse grunted on being placed against a wall and threatened with a stick, the fact of the grunt was indicative of disease and, in the majority of cases, was a premonitory symptom of roaring. This he considered unsoundness although the animal might be sound in his wind and unable to make any noise when galloped.

Mr. HURNDALL : A horse may be made to grunt when threatened with a stick but he may not be unsound for all that.

Professor MACQUEEN : Does Mr. Wragg mean to say that if he places a horse against a wall, threatens it with a stick, and it grunts, he considers the animal unsound on that examination only ?

Mr. WRAGG : I should give a certificate to say that the horse was unsound because he was a grunter. I always like to leave myself a little loophole.

Professor MACQUEEN : You don't consider a horse unsound in wind merely because it grunts ?

Mr. Wragg : I say unsound in wind, and in the majority of cases I believe grunting is a premonitory symptom of roaring.

Professor MACQUEEN : You didn't say so before. I should like to add one word on the remarks which have been made as to testing a horse with a stick. It may not be generally known but it is a fact that in certain parts of the country a horse that grunts when placed against a wall and threatened with a stick, is often trained in a dealer's stable not to grunt. The practice is to approach the horse several times a day, threatening it with a fist or a stick, until at length he becomes so accustomed to the procedure that he ceases to grunt when thus threatened. Of course that is only done in cases where the horse grunts and does not whistle or roar. I throw

that out to those who still pin their faith to the obsolete method of testing a horse's wind by bulling, or threatening the animal with a stick.

Mr. SAMSON: Obsolete! It is done every day.

Professor MACQUEEN: What I should have said is that the method ought to be obsolete. I wish to add one other warning word. The decisions on roaring date from the time of Lord Ellenborough. He gave two very important decisions on roaring in one of which he said that roaring did always constitute unsoundness. Ten years later he slightly modified that decision. In his second decision he said that he did not go by noise but by the disease, and unless roaring or the sound made could be traced to some pathological condition—or what he called disease—it could not be held as unsoundness. We cannot say anything regarding grunting because there has never been a question raised in the law courts concerning that peculiar sound which I maintain is only a habit.

Mr. WRAGG: I should like to say that that is only a theoretical opinion.

Professor MACQUEEN: That is the opinion that holds ground to-day.

Captain BLENKINSOP: I once rode a pony which always grunted. It was unfortunately killed in a race. The noise which the pony emitted was totally different to the noise emitted by a roarer.

Mr. CATON said his experience had been similar to that of Mr. Wragg, and that horses which grunted sooner or later developed some disease of the lungs or became roarers. Although they might work for a time yet they were invariably bad goers,and would break up with some disease of the lungs. If they were attacked with pleuro-pneumonia they succumbed. He held that it was more prudent to declare that a horse was unsound if he grunted than to pass him as a sound animal; and he contended that their practical experience justified their adopting this course.

Veterinary-Captain F. SMITH asked what evidence they would give in the witness-box in a case where a horse had been certified to be unsound simply because it grunted, and in which there was afterwards found no unsoundness.

Replying to Mr. Dowell, who adverted to the case which had given rise to the Lincolnshire Society's resolution,

Mr. HURNDALL explained that it was not the custom to examine a horse at Tattersall's for wind if its owner declared it to be a good hunter.

The CHAIRMAN: The resolution of the Lincolnshire Society and their letter require a definite answer from us, and before a definite answer can be given, we must have something in the shape of a proposition. Major Glover has already made one proposal. I consider both grunting and this resolution of the Lincolnshire Society very important matters. That Society have very definitely committed themselves to something, and they ask us whether we will commit ourselves to the same thing or not. We are now enjoying the advantage of a very general and long discussion on the subject. Though I have my own opinions I must hide behind the chair to-night, unless it comes to a casting vote. There is a certain amount of danger, I think, in the metropolitan society giving their unqualified adhesion to the statements contained in the resolution of the Lincolnshire Association, unless this Central Society is absolutely clear on the point. We have hardly heard what grunting is physiologically. I did rather expect to hear what physiologically led up to grunting. Still we all understand what grunting is, and we know it can be performed by most healthy animals. We have had brought before us to-night a variety of circumstances perfectly clear in themselves in which the grunting is emitted. I am very glad to find that there have been two sides taken, and now I will receive your propositions.

Major GLOVER then reiterated his motion, which was seconded by Professor Macqueen, and ran as follows:—"That, in the opinion of this Association, the sound known as grunting should not in itself be considered an indication of unsoundness, and that, whether a horse grunts or not, when threatened or bulled, without a further test only a qualified opinion should be given."

To this Mr. SAMSON moved, and Mr. Upton seconded, the subjoined amendment:—"That in the opinion of the members of this Association the sound known as grunting is a decided cause of unsoundness, and is a sufficient reason for the rejection of any animal so affected, when submitted to veterinary examination."

A second and a third amendment were received by the chairman, which were as follows: Moved by Captain Butler and seconded by Mr. Butters—"Owing to want of unanimity amongst the members, the Central Veterinary Medical Society finds itself unable to support the conclusion of the Lincolnshire Association on the question of grunting." Proposed by Mr. Hurndall, and seconded by Captain Smith—"That, in reply to the Lincolnshire Veterinary Medical Association, the fellows of the Central Veterinary Medical Society are of opinion that the sound known as grunting cannot be accepted alone as evidence of unsoundness; and, apart from some affection of respiratory organs, is not a sufficient reason for the rejection of any animal, but in all cases the existence of grunting should be notified on the certificate."

For Mr. Samson's amendment there were 5 votes, for that of Capt. Butler 8 votes, and for that of Mr. Hurndall, 4 votes. In favour of the original motion, proposed by Major Glover, there were 14 votes, and it was carried as a substantive motion by 22 votes to 3.

FIBROUS ANCHYLOSIS IN THE HORSE.

The discussion on the paper by Captain Blenkinsop, which was set down for resumption had to be deferred until the next meeting, owing to the lateness of the hour.

Mr. HURNDALL intimated that Captain Smith had kindly promised to resume the discussion instead of himself.

The meeting then terminated.

LIST OF SUBSCRIBERS TO THE VETERINARY MUTUAL DEFENCE FUND 1894 and 1895.

	£	s.	d.		£	s.	d.
James Clark	0	10	6	F. G. Samson	0	10	6
J. Overed	0	10	6	A. L. Gibson	0	10	6
T. A. Dollar	0	10	6	Henry Thompson	0	10	6
H. G. Rogers	0	10	6	H. Howse	0	10	6
W. J. Mulvey	0	10	6	W. Carless	0	10	6
T. G. Chesterman	0	10	6	A. H. Farrow	0	10	6
J. C. James	0	10	6	W. Anderton	0	10	6
G. C. Hunting	0	10	6	A. H. Jacobs	0	10	6
G. Hardie	0	10	6	J. M. Axe	0	10	6
Richard Reynolds	0	10	6	H. W. Caton	0	10	6
John Bell	0	10	6	F. M. Wallis	0	10	6
W. Whittle	0	10	6	E. Faulkner	0	10	6
T. Simpson	0	10	6	A. J. McCallum	0	10	6
W. Shipley	0	10	6	H. J. Goodall	0	10	6
J. Freeman	0	10	6	F. Booth	0	10	6
W. Roots	0	10	6	W. H. Webb	0	10	6
P. Abson	0	10	6	J. B. Wolstenholme	0	10	6
R. C. Trigger	0	10	6	A. S. Macqueen	0	10	6
J. Reynolds	0	10	6	H. Hogben	0	10	6
G. Rugg	0	10	6	S. Villar	0	10	6

	£	s.	d.		£	s.	d.		£	s.	d.		£	s.	d.
C. Hartley	0	10	6	B. Freer	0	10	6	W. A. Field	0	10	6	T. A. Frost	0	10	6
H. Olver	0	10	6	W. Woods	0	10	6	W. H. Bloye	1	1	0	W. H. Ferguson	0	10	6
G. E. Bowman	0	10	6	H. R. Perrins	0	10	6	F. W. Wragg	0	10	6	A. Munro	1	11	6
James Rowe	0	10	6	Samuel Lomas	1	11	6	J. B. Tutt	0	10	6	H. Gray	1	11	6
W. P. Western	0	10	6	E. Beddard	0	10	6	J. H. Hobson	0	10	6	P. Perkins	0	10	6
W. Bower	0	10	6	J. Storrar	0	10	6	R. H. Cartwright	0	10	6	H. G. Bowes	1	1	0
F. Danby	0	10	6	W. Dobie	0	10	6	T. D. Lambert	0	10	6	James Brand	1	1	0
O. G. Barrow	0	10	6	T. E. Auger	0	10	6	J. Woodger	0	10	6	Hugh C. Jagger	1	10	6
C. W. Elam	0	10	6	G. A. Banham	0	10	6	S. Locke	0	10	6	Trustees of the late			
J. M. Stewart	0	10	6	R. C. Edwards	0	10	6	H. D. Chorlton	0	10	6	Thomas Greaves	0	10	6
F. Dun	0	10	6	Israel Trent	0	10	6	J. S. Carter & Son	1	1	0	James Brand	0	10	6
D. Charnock	0	10	6	F. R. Stevens	0	10	6	Joseph Hall	1	11	6	H. G. Bowes	0	10	6
J. Blench	0	10	6	E. Nuttall	0	10	6	S. H. Slocock	1	11	6	William Caudwell	0	10	6
H. Snarry	0	10	6	J. H. Carter	0	10	6	T. Collins	0	10	6	E. D. Johnson	0	10	6
E. H. Leach	0	10	6	J. S. Wheatcroft	0	10	6	J. Wright	0	10	6	F. H. Ridler	0	10	6
C. Sheather	0	10	6	J. L. Parr & C. Moir	1	1	0	A. Bate	0	10	6	F. B. Jones	0	10	6
F. H. Gibbings	0	10	6	T. Aubrey	0	10	6	G. Morgan	0	10	6	C. Morgan	0	10	6
B. Russell	0	10	6	J. J. Burchnall	0	10	6	H. J. Dawes	0	10	6	J. L. Barling	0	10	6
J. K. Calderwood	0	10	6	J. Atcherley	1	11	6	A. M'Cormack	0	10	6	T. W. Kendall	0	10	6
E. J. Scriven	0	10	6	P. Deighton	0	10	6	J. W. Edwards	1	11	6	J. E. Kitchen	0	10	6
W. Maynard & Son	1	1	6	A. Over	0	10	6	J. & A. Lawson	1	1	0	Ball and Son	1	1	0
F. Bowman	0	10	6	Batt and Son	1	1	0	E. W. Hoare	0	10	6				
J. McKinna	1	11	6	F. T. Stanley	0	10	6	T. Hopkin	0	10	6		£85	9	6
A. W. Mason	0	10	6	A. L. Butters	0	10	6	P. Taylor & Son	1	1	0				
L. Jones	0	10	6	Sir F. FitzWygram	0	10	6	S. Jackson	0	10	6				

ALFRED H. POWNALL
JNO. B. WOLSTENHOLME } *Auditors.*

Jan. 11th, 1896.

THE VETERINARY BENEVOLENT FINANCIAL STATEMENT, 31ST DECEMBER, 1895.

MR. EDWIN FAULKNER, Honorary Treasurer, in Account with the Fund.

RECEIPTS.

Dr.	£	s.	d.
Jan. 1.—To Cash at Bankers ...	439	18	0
Dec. 31.— Mersey Dock and Harbour Board, one year's Interest on Bond for £1300, at 4 per cent., less tax	50	5	4
Mersey Dock and Harbour Board, one year's Interest on Bond for £600, at 3⅞ per cent., less tax	22	9	6
Manchester Corporation Improvement Committee, 1 year's Interest on Mortgage for £900, at 3 per cent., less tax ..	26	2	0
Bank Interest	3	12	11
	£542	7	9

PAYMENTS.

Cr.	£	s.	d.
Dec. 31.—By Cash at Bankers ...	542	7	9
	£542	7	9

INVESTMENTS.

	£	s.	d.
Mersey Dock and Harbour Board— 4 per cent., Bond No. 71,621, dated July 2nd, 1880	1,300	0	0
3⅞ per cent. Bond No. 77,534, dated March 6th, 1883	600	0	0
Manchester Corporation Improvement Department—3 per cent. Mortgage No. 460, dated 2nd October, 1890 ...	900	0	0
	£2,800	0	0

We have examined the above written Account, and certify the same to be correct. We have also inspected the Securities deposited with the Bankers, which we find in order.

ALFRED H. POWNALL,
Chartered Accountant, Manchester

JNO. B. WOLSTENHOLME.

11*th January*, 1896.

THE VETERINARY MUTUAL DEFENCE FINANCIAL STATEMENT, 31st DECEMBER, 1895.

MR. EDWIN FAULKNER, Honorary Treasurer, in account with the Fund.

RECEIPTS.

Dr.	£	s.	d.
Jan. 1.—To Balance at Bankers, ...	435	19	0
Dec. 31.— Subscriptions for 1895, as per list	85	9	6
Bank Interest	2	14	3
Cash due to Treasurer ...	3	7	4½
	£527	10	1½

PAYMENTS.

Cr.	£	s.	d.
Dec. 31.—By Hire of Rooms	0	15	0
Stationery, etc.	7	3	6
Solicitors' Costs—Griffiths *v.* Simpson and Brand and Bowes ...	35	0	0
Accountants' Charges & New Books	12	10	0
Advertising	0	5	0
Secretary's Postages and Expenses	1	7	0
Treasurer's " " "	1	2	0½
Cheque Book	0	1	8
Cash at Bankers	469	5	11
	£527	10	1½

We have examined the above written Account, and certify the same to be correct,

ALFRED H. POWNALL, Chartered Accountant, Manchester.

11*th January*, 1896. JNO. B. WOLSTENHOLME.

EXTRACTS AND NOTES.

THE FATE OF MICRO-ORGANISMS IN INSPIRED AIR.

By ST. CLAIR THOMPSON M.D.LOND., M.R.C.P.LOND., AND R. T. HEWLETT, M.D.LOND., M.R.C.P.LOND.

(*From the Bacteriological Department of the British Institute of Preventive Medicine.*)

The fate of the thousands of microbes which enter the human body is a question of great pathological interest, and this increases when it is remembered that the expired air is practically quite free from germs. A study of the subject should therefore be instructive in showing how the human economy deals with the hosts of organisms which are continually invading it through the air we are always breathing. The fact that inspired organisms, do not, as a rule, reach the air cells was first pointed out by Lister. He observed that "in simple fracture of the ribs, if the lung be punctured by a fragment driven inwards upon it, the blood effused into the pleural cavity from the wound in the highly vescular organ, though freely mixed with air which enters the pleura through the same orifice, undergoes no decomposition, as is clearly implied by the absence of any symptoms of pleurisy in such cases. The air is sometimes pumped into the pleural cavity in such abundance that, making its way through the wound in the pleura costalis, it inflates the cellular tissue of the whole body; yet this occasions no alarm to the surgeon, unless the openings in the parietal pleura become insufficient to permit free egress for the air, which then becomes pent up in the serous cavity and, distending it far beyond its natural dimensions, encroaching so seriously on the other lung as to embarrass or even abolish its functions." In a post-mortem examination on such a case ten days after the receipt of the injury Lister found the enormously distended pleura free from effusion and perfectly smooth and healthy. This observation was explained by the atmosphere being filtered of germs by the air passages, "one of whose functions it is to arrest inhaled particles of dust and prevent them from entering the air cells. Later Tyndall showed by his experiments with a ray of light in a dark chamber that expired air—or, more exactly, the last portion of an expiration—is optically pure—*i.e.*, that respiration has freed it from the particles of suspended matter with which it is laden. In 1882 Gunning of Amsterdam showed that expired air contains no microbes capable of provoking putrefaction in sterile liquids through which it has been passed, and in 1887 Strauss and Dubreuil independently arrived at a similar conclusion. They spent thirty minutes in expiring from 200 to 300 litres of air into tubes, in the bottom of which was a layer of sterilised alkaline bouillon. The greater number of these tubes remained sterile; a few showed growths of microbes and moulds, doubtless due to accidents of manipulation. Grancher has made many experiments with the expired air of phthisical patients and has never found in it the tubercle bacillus or its spores. Charrin, Karth, Cadéac, and Mallet have made analogous experiments with negative results. In a further series of confirmatory experiments on this subject Strauss showed that on an average of 809 bacteria and spores inhaled only one single germ is expired. Now, as the air is practically freed from all germs by the respiratory act, we have to consider where and how the thousands of organisms are arrested in the air passages. The experiments of Hildebrandt would tend to prove that the air is entirely freed from all germs before reaching the trachea. In controlling this we have examined the mucus from the trachea of all animals recently killed in the laboratory, neglecting, of course, any that had suffered from affections of the respiratory tract. The opportunities are too few to be recorded numerically, but up to the present we have always found this mucus to be quite sterile. The above shows that the fate of micro-organisms must be sought for principally in the upper air passages. We therefore commenced with the nasal fossæ, and our experiments are published in the paper already referred to. The result we arrived at was that "the mucous membrane of the healthy nose only exceptionally shows any micro-organisms whatever. The interior of the great majority of normal nasal cavities is perfectly aseptic. On the other hand, the vestibules of the nares, the vibrissæ lining them, and all crusts formed there are generally swarming with bacteria." These two facts seem to demonstrate that the vibrissæ act as a

filter and that a larger number of microbes meet their fate in the moist meshes of the hair which fringes the vestibule. Not only does this arrangement arrest the ingress of germs, but others which have penetrated into the nose are rapidly ejected by the action of the ciliated epithelium.

Wurtz and Lermoyez hold that the nasal mucus itself exerts a bactericidal influence on all, or nearly all, pathogenic agents. So far we have been unable to corroborate their researches; but this may be due to our want of success in obtaining an appreciable quantity of sterile mucus. To collect this secretion it is necessary to introduce a sterilised cotton-wool plug into the nasal cavity and leave it there for some time. We have found it practically impossible to do this without contaminating the tampon with the vibrissæ at the orifice. Now, as we have shown, these are never free from germs, and the nasal mucus with which they come in contact was in no case sufficiently germicidal to prevent their free growth when sown on gelatine plates. In some cases we left the nasal mucus in a sterilised glass for from one to sixteen hours at room temperature, during which period it had abundant time to exert its destructive action on the germs which had adhered to it when passing out along the vibrissæ. Nevertheless, there were always a free growth of yellow and white colonies when gelatine plate cultivations were made from it.

Although we have been unable to obtain any proof of bactericidal qualities in nasal mucus, we have satisfied ourselves that it is possessed of the important property of exerting an inhibitory action on the growth of micro-organisms. This is shown by what we have said above and by the following experiment. A loopful of a fluid culture of the B. prodigiosus was mixed with a small quantity of nasal mucus. From this gelatine plate cultivations were prepared, some immediately and others at various intervals up to thirty-six hours; on each occasion the same quantity of the mixture was used for inoculating the plates. The number of colonies of the B. prodigiosus which developed in various plates was practically identical, showing that no increase in the number of organisms had taken place, and also that no germicidal action had been exerted during even many hours' exposure to the mucus.

We have made a great number and variety of experiments in order to test the bacterial condition of the air before and after passing through the nose. Practically all, or nearly all, the micro-organisms of the air are arrested before reaching the naso-pharynx; probably a majority are stopped by the vibrissæ at the very entrance of the nose, and those which do penetrate as far as the mucous membrane are rapidly eliminated. The nasal mucus is an unsuitable soil for the growth of organisms, and hence is an important factor in that it does not further their multiplication. The removal of the intruding organisms from the Schneiderian membrane is probably in the main due to the action of the ciliated epithelium, assisted by the trickling of mucus and the lachrymal secretion. Phagocytosis may share in the work of removal, though to a small extent, for we have only once found phagocytic cells containing bacteria.—*Lancet*.

[This extract has a very direct bearing on the question of infection by inhalation. It certainly gives no support to the theory that dried but active organisms reach the lungs by inhalation.—Ed.].

THE USE OF EDUCATION.

Science Progress for January contains an interesting address delivered at a metropolitan polytechnic by Mr. H. E. Armstrong. He points out how fast we are losing our commercial prosperity because we will not, whether we make butter or cheese or leather or anything else, study scientifically the factors which go to ensure success. Concerning our present methods of education he says:—

English boys and girls at the present day are the victims of excessive lesson learning, and are also falling a prey, in increasing numbers year by year, to the examination demon which threatens by far the most ruthless monster the world has ever known either in fact or in fable. Ask any teacher who has to do with students fresh from school his opinion of them: he will say that in the great majority of cases they have little if any power of helping themselves, little desire to learn about things, little if any observing power, little desire to reason on what they see or are called on to witness; that they are destitute of the sense of accuracy, and satisfied with any performance, however slovenly; that, in short, they are neither inquisitive nor acquisitive, and as they too often are idle as well the opportunities offered to them are blindly sacrificed.....Boys and girls at school must be taught from the very earliest moment to *do* and to *appreciate*. It is of no use our teaching them merely *about* things, however interesting—no facts must be taught *without their use* being taught simultaneously; and as far as possible, they must be led to discover the facts for themselves.

These are admirable words and should be handed to every teacher in the kingdom.

NEW YORK STATE VETERINARY COLLEGE.

At the two last sessions of the Legislature bills were passed appropriating to Cornell University, Ithaca, the sum of $150,000 for the purpose of building a veterinary college. This appropriation is for the building alone, the State agreeing to the following resolution, which was adopted by the Board of Trustees of Cornell University, June 20, 1894:

Resolved: That the Board of Trustees authorize the location on the University grounds of the State Veterinary College, and express their willingness, when the State shall have made sufficient provision for buildings, equipment, and maintenance, to administer the State Veterinary College in such manner as may be hereafter agreed upon, subject, however, to the condition that the University is not to undertake any part whatsoever of the financial responsibility connected with the State Veterinary College, whether for buildings, equipment, care, experimentation, investigation, instruction, or any other object; though, for the sake of reducing the cost of maintenance to the State, the university consents to furnish instruction to students of the State Veterinary College in such scientific and other subjects as are now or may hereafter be included in the curriculum of the University, upon such terms as may be deemed equitable, regard being had to the fees paid by university students for instruction in such courses.

From this resolution it will be seen that the State is bound to make further appropriations for the maintenance of the College. This will seem just when it is known that the object of the College is not simply to give instruction to students, but also to advance veterinary science, and care for the interests of animal industry in the State. In this respect the veterinary college resembles the College of Agriculture, which is both a department of the University and an experiment station of the State.

The Veterinary College group consists of six buildings, as originally planned. The first, the main building, will contain a large museum, two lecture rooms, laboratories, and research rooms for the professors. The second will be known as the operating building, the

third as a mortuary, the fourth will contain the general ward for the non-contagious medical and surgical cases, the fifth the contagious wards, and the sixth will be a residence for the student groom and his assistants.

The front of the main building will be 139 feet in length, and with a projecting one-story wing the building will be 175 feet deep. Adding to the depth of the main building the five smaller buildings in the rear, the whole College will extend back from East Avenue fully one-eighth of a mile. The main structure will be three stories in height, with a large basement.

The plans for the buildings were drawn by Prof. Francis E. Osborne of the Cornell Faculty in Architecture. When completed, the College will be the finest devoted to veterinary science in the country.—*New York Weekly Times.*

THE AGRICULTURE OF LONDON.

The statistical history of the agriculture of London extends back only a couple of years, yet it will come as a surprise to many that London takes any active share whatever in the prosecution of the national industry. The definition of the Administrative County of London under the Local Government Act made an addition of one to the English Counties from which returns are annually collected by the Board of Agriculture. As thus defined, London embraces a total area of 75,442 acres, made up of 31,484 acres in Middlesex, 23,898 acres in Surrey, and 20,060 acres in Kent. A better idea of the constitution of this area will be gathered from the statement that it includes the Parliamentary boroughs of Battersea and Clapham, Bethnal Green, Camberwell, Chelsea, Deptford, Finsbury, Fulham, Greenwich, Hackney, Hammersmith, Hampstead, Islington, Kensington, Lambeth, Lewisham, City of London, Marylebone, Newington, Paddington, St. George's (Hanover Square), St. Pancras, Shoreditch, Southwark, Strand, Tower Hamlets, Wandsworth, Westminster, and Woolwich. The population of this area in 1891 was returned at 4,232,118 persons, and its agricultural statistics, first collected in 1893, are now available also for the two subsequent years.

ACREAGE UNDER CROPS AND GRASS, AND NUMBER OF LIVE STOCK IN THE COUNTY OF LONDON IN 1893, 1894, AND 1895:—

CROPS.	1893.	1894.	1895.
	Acres.	Acres.	Acres.
Corn crops ..	812	746	619
Green crops ..	2,840	2,894	2,778
Clover, sainfoin, & rotation grasses	401	207	287
Permanent grass land	10,182	10,330	10,247
Small fruit ..	332	346	301
Bare fallow	360	259	169
Total cultivated land ..	14,927	14,782	4,401
LIVE STOCK.	No.	No.	No.
Horses	991	997	31
Cattle	7,654	6,732	6,254
Sheep	5,438	6,399	4,044
Pigs	3,233	3,300	3,465
Milch kine ..	6,657	6,173	5,666

Corn crops, it is seen, have contracted their area by one-fourth, the loss having been borne almost entirely by the wheat crop. The area under green crops, of which one-fifth are potatoes, remains fairly steady. More than one-third of the area is occupied by "other green crops"—that is, crops other than potatoes, turnips, mangel, cabbage, and vetches—and it is under this head that the considerable extent of market garden crops is no doubt included. Small fruit is losing ground. The area of permanent grass land, not broken up in rotation, has undergone a slight increase, probably at the expense of clovers and rotation grasses which are allowed to remain down, and thus pass into the "permanent" category. The total cultivated area appears to be steadily declining, and is now 500 acres less than it was two years ago. It would appear that the builder is gradually squeezing the farmer out of the metropolitan area. Nursery grounds, occupying about 150 acres, are not included in the table.

Horses do not show much variation in number. The figures refer only to agricultural horses, unbroken horses, and mares kept solely for breeding, and, as a matter of fact, 80 per cent. of them fall under the first head. London draught horses, carriage and riding horses, are obviously outside the computation. The figures relating to sheep are not of much significance, for they probably refer to little more than the number awaiting sale or slaughter to meet the requirements of the metropolis. Pigs show little fluctuation, and in this respect do not reflect the variations in the number of swine characteristic of the country at large. The figures for cattle are the most interesting, and they are seen to indicate a steady decrease. In the last line of the tables we give the numbers of the cattle which are embraced in the designation of "cows or heifers in milk or in calf." They show that this year 5,666 head, or 90 per cent. of the total, may be regarded as dairy cows maintained to minister to the requirements of the metropolitan milk supply. The cattle coming under this head are, however, already a thousand less than they were two years ago, and if the diminution should continue at this rate the town cow-shed is likely in the course of ten years or so to disappear.—*Times.*

TEMPERATURE AND FISH HATCHING.

The arrangements of the hatchery are not yet adapted for rearing larval fishes, and hence the young fry are turned out in from three to five weeks, or as soon as the yolk-sac is nearly absorbed, the rate of its absorption being apparently much governed by the temperature of the water. The fry have been distributed in various localities in the Firth of Forth and in St. Andrews Bay, some of them near the shore when the tide was high, and others further out at or about the time of low water. The temperature seems to have no further influence upon the hatching process than to quicken or retard it, as the case may be; for Mr. Dannevig, the superintendent of the hatchery, in a special paper descriptive of his experiments on this subject, states that the time of incubation is various under the same conditions for different species, and that the difference is chiefly governed by the size of the eggs, large eggs always taking a longer time than small ones. For the same species, the time of incubation varies according to the temperature, and the variation for each degree is comparatively greater in a low temperature than in a high one. The development of fish eggs will take place at temperatures even below zero, when the specific gravity of the water is sufficiently high to prevent it from freezing, and the hatched embryos or larval fishes thrive satisfactorily at all temperatures above zero. Fry at high temperatures, such as 50deg. to 57deg. Fah. were not so lively as at lower ones, but this appeared to be due to their being confined in a small quantity of water. Fry of haddock, after being hatched in water of 42deg. Fah. were exposed to sudden changes by placing some of them in water at zero and others in water at 10deg., and in no case was any particular effect produced by the change. Immediately after either transference they appeared quiet and inactive, but were soon restored to their ordinary condition.—*Times.*

FROST'S PATENT DRENCHING BRIDLE.

The accompanying sketch is that of a device for holding up the heads of horses and cattle whilst giving drinks, balls, paste or any kind of medicine.

By its aid one man can give a drink to any horse, from a Shetland pony to a Shire stallion, without any assistance whatever and to cattle likewise, thus dispensing with one or two men to hold up the animal's head by means of a fork, twitch, bulldog or other method at present practiced.

The holder fits in mouth like a bridle, the flat leather fitting against roof of mouth between incisor teeth and molars, and causing no impediment to bottle, balling gun or horse. The strap under lower jaw should not be tightly buckled, as freedom of the jaw is necessary.

Messrs. Arnold & Sons, West Smithfield, London, are the sole agents for the sale of this appliance.

Cycles, by an Ostler

(Suggested by Hood's Sonnet on Steam.)

Now wot's to come of 'orses, I dunno,
And wot's to come of me's another question,
With these 'ere cycles always on the go—
The very sight perdooces indigestion!
You can't say clck' to them, you can't say whoa!
They don't want grooming, and they don't want shoeing,
And them rhoomatic tyres wot makes 'em so
Luxurious-like—it all means our undoing.

But that's not all: an even rummer start
They've just invented, called an Automubble,
Where paraffin is 'arnessed to a cart—
To save, I 'spose' the 'orse and ostler trouble!
Lord, 'orses soon will only be in circusses,
And if you want an ostler, try the work'uses!

E. V. L.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

The following should have appeared with the discussion on "Examination of Horses" published last week:—

Mr. FAULKNER expressed his great appreciation of the able manner in which Mr. Hopkin had handled this subject. It was no doubt old and hackneyed, as the President remarked, but dealt with as on this occasion it lost its hard and dry aspect and became most interesting. He was struck with the essayist's remarks in closing, "that the examination of horses as to soundness required care and common sense," but might he not have gone further and said combined with experience, close observation, and absorption of the results. Mr. Hopkin had given the members evidence that ample experience had fallen to his lot in this branch of the profession by which he had profited, otherwise he could not have put the matter before them in such a very practical manner, for which he was entitled to every credit and the best thanks of the Association.

The definition of soundness laid down was that commonly accepted, but yet not entirely satisfactory, as in examinations one may tell to a certain extent if there is anything abnormal interfering at the time, but not definitely as to the future; and in such instances experience with caution become useful. With the essayist's definitions of technical and practical soundness he quite agreed.

In the course of a lengthened and extensive experience of examinations many interesting and singular cases are met, notably amongst hunters and others for wind, such as whistling, temporary and permanent, the so-called characteristic cough and grunt of a roarer, in cart and other horses that do not roar in their work, and the roarer in his work that has not the cough or grunt considered indicative of a roarer, and in other instances where the animal is not a roarer or whistler, or broken-winded, has a good cough with pulse, temperature and respiration normal, but upon exertion the respiration is abnormally quickened, with heaving flanks and distended nostrils, and remains so for a lengthened period afterwards

Although having seen many animals affected with stringhalt he could not call to mind an instance where it developed into shivering, as stated by Mr. Lawson. He thanked the essayist for his excellent paper.

OUTBREAK OF GLANDERS AT POLESWORTH.

On the 2nd December last, four horses were found to be affected with glanders by Mr. Olver, F.R.C.V.S., of Tamworth. This fact was reported to the Warwickshire local authority, and Mr. Ison, of Atherstone, the veterinary inspector of the district, having confirmed the outbreak, the animals were then slaughtered by order of the authority. Subsequently, Mr. Olver tested with "mallein" sixty-one animals at the colliery, the result of which proved that 19 animals which had been in contact with those already slaughtered were also affected. The nineteen were accordingly slaughtered by order of the authority, several others remaining under suspicion. On December 26 Mr. Olver inoculated with "mallein" the whole of the remaining horses above and below ground, numbering 79, which proved 10 to be affected, and these were slaughtered on the 30th, together with 16 others which had been exhibiting suspicious signs of having the disease. The last test of "mallein" showed the horses in the 7-foot colliery to be quite clear, and only those that were first under suspicion to be actually diseased. It is hoped that the stringent measures adopted will thorough-

ly eradicate the malady. Thirty-three animals in all were slaughtered as being affected with glanders, for which one-fourth value, as compensation, has to be paid by the Warwickshire Local Authority, amounting to £141. For the remaining 16, which were ordered to be slaughtered under suspicion, compensation has to be paid to the amount of £262, being the full value. The outbreak has been a very serious matter for the proprietors of the colliery, inasmuch as the works have had to be stopped for some portion of the time, and the men have consequently not been fully employed.—*Tamworth Herald.*

NEW BOOKS.

VETERINARY OBSTETRICS.

Messrs. Bailliere, Tindall and Cox have issued a second edition, revised, of Dr Fleming's *Text-Book of Veterinary Obstetrics*. The work extends to 750 pages and contains 226 illustrations. There is no other systematic treatise on the subject in the English language, and it is small praise to say that no student and few practitioners can do without it.

In the preface to the first edition the author acknowledges assistance from Professor Saint-Cyr and Mr. Cartwright, but we fancy he has been very much more indebted to the one than the other. In every chapter Saint-Cyr is mentioned, and if this acknowledgment is inadequate it is more a matter for the author than the reader. The price of the book is only 25s.

A Text Book of Veterinary Obstetrics including the diseases and accidents incidental to pregnancy, parturitions and early age in the domestic animals; by Dr. G. Fleming, C.B., L.L.D. Second edition, revised. London: Bailliere, Tindall, & Cox., King William Street, Strand. 1896.

LIVE-STOCK JOURNAL ALMANAC.

To hold his own with stock-owners it is quite as necessary for a veterinary surgeon to be well acquainted with the latest facts and opinions about stock as for him to be up to date with his pathology.

The Live-Stock Journal Almanac is a complete text book for those desiring this knowledge, and it is a book of reference which no one can afford to be without.

Its price is one shilling, and it contains twenty articles, each worth the money. There are articles on thoroughbreds, ponies, horse-breeding, cavalry horses, draught horses, agricultural shows, milk, wool, pastures, pork, fowls, dogs etc. The doings of every breed of horses, cattle, and sheep during the past year are treated of by masters of their subjects. Captain Hayes, Dr. Fleming, and Professor Axe are contributors, as are also Sir W. Gilbey, Captain Fife, Messrs. Housmann, Tegetmeier, Vero Shaw, John Thornton, Wm. Carruthers and others.

There are a number of illustrations of champion animals, and it would be interesting to know the result of a comparison of Rokeby Harold with Holyrood by a good horseman who knew little of Shires or Clydesdales.

JOURNAL OF THE ROYAL AGRICULTURAL SOCIETY.

The volume for December, 1895, contains five special articles, two of which are interesting to veterinarians. One by Mr. T. W. Cowan is on "Foul Brood" a disease of bees. Its interest to those not engaged in bee-keeping lies in the fact that it is a specific contagious disease. The larvæ are attacked in their cells by a bacillus—the bacillus alvei—and the contagion is carried by the bees and by the honey. Of course hives become infected and so the stamping out of the disease by destruction of bees, honey, and hives seems the only safe way of controlling the plague.

The other is by Professor McFadyean on "The Prevention of Tuberculosis." The nature of the disease and its methods of spread are described in simple lucid language. Different ways of prevention are referred to. The first mentioned is the plan tried by the State of Masachussetts—compulsory testing with tuberculin and slaughter of all animals reacting, with compensation. Then plan is of course condemned as too expensive. Then the proposed French plan is referred to. It is less drastic, but is also condemned as too costly. A third plan is approved—that adopted by Denmark. This consists in encouraging owners to stamp out disease themselves, whilst the Government supplies gratuitously tuberculin and veterinarians to apply the test. The obvious objection to this course is that it is not a general attempt at prevention at all. It would be an interesting experiment if conducted with care, and would furnish some data for future action.

In the Zoologist's annual report we find an account of a disease of sheep due to the *strongylus contortus* from which we quote. "Last spring notice was received of a serious outbreak among the sheep on a Norfolk estate. Just after lambing the ewes began to show signs of weakness and to die off in an alarming manner. On examining a dead sheep it was found that the last stomach, or abomasum, contained very large numbers of a parasitic worm and these were sent to the Zoologist for identification. They proved to be *strongylus contortus*, Rud., a worm well known in Germany as the cause of a disease known as "magenwurmseuche" which is a kind of gastric catarrh . . . . . The female worm is about an inch long. The male is smaller. The colour, red or white, depends on the amount of blood it happens to contain in its digestive canal. . . . . The drugs which have been found most efficacious are kamala and picrate of potas. The latter is an explosive substance, so the following course is suggested. Dissolve 467 grains of carbonate of potas in 100 ounces of water. One ounce of this solution to which 16 grains of picric acid has been added, is a dose for a full-grown sheep. A cure may be expected after three days treatment!! There are many other interesting articles and reports in the journal, one on "Horseless Carriages" which will interest veterinary practitioners.

COMMUNICATIONS, BOOKS, AND PAPERS RECEIVED:—Messrs. R. Barron, G. Upton, J. Donald, A. Marston, E. Faulkner, T. Brakenridge & Co. *American Veterinary Review.*